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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : G06F 17/60, 7/52 — A1

(11) International Publication Number: WO 97/14108

(43) International Publication Date: 17 April 1997 (17.04.97)

(21) International Application Number: PCT/US96/16567

(22) International Filing Date: 11 October 1996 (11.10.96)

(30) Priority Data:
08/541,045 11 October 1995 (11.10.95) US

(71) Applicant: BLOCK FINANCIAL CORPORATION [US/US]; Suite 500, 4435 Main Street, Kansas City, MO 64111 (US).

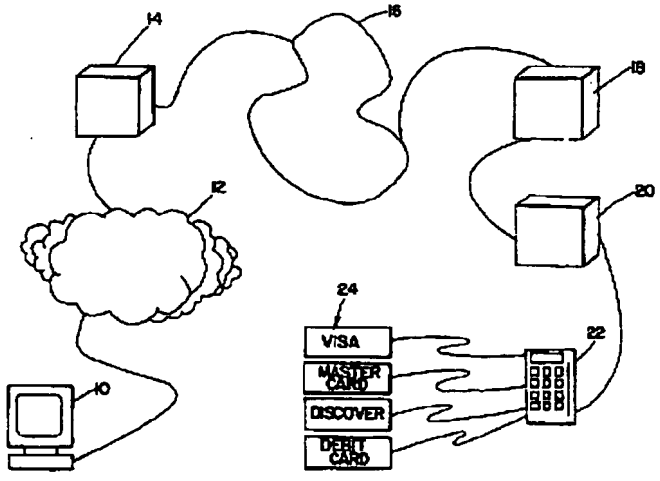
(72) Inventors: ANDERSON, William, P.; 800 Westover Road, Kansas City, MO 64113 (US). GELLER, Jacob, B.; 35 Stephen Street, Montclair, NJ (US). CUNNIGHAM, G., Cotter; 1206 W. 61st Street, Kansas City, MO (US). RODGERS, Kris; 1251 Huntington Road, Kansas City, MO (US). MASON, Brian; 10048 Holly Lane, Des Plaines, IL (US).

(74) Agent: STANDLEY, Jeffrey, S.; Standley & Gilcrest, Suite 500, 555 Metro Place North, Dublin, OH 43017 (US).

(81) Designated States: AT, CA, CH, DE, DK, ES, GB, JP, LU, PT, SE, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).

Published
With international search report.

(54) Title: FINANCIAL INFORMATION ACCESS SYSTEM



(57) Abstract

A system is disclosed in which a user (10) of an information service (14) may access financial data relating to recent credit and debit card transactions (24). Any entity with a TCP/IP connection to the internet (12) may access the system so that world-wide accessibility to financial services is possible. Alternatively, the system may be accessed through an online information service. The financial data are processed daily by a financial services provider (16), then transmitted to a host computer connected to an information service. The user connects to the information service host computer to access the financial data for transactions that may have been posted as recently as the previous day. The user may also download the financial data directly to an accounting or word-processing program for further processing.

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FINANCIAL INFORMATION ACCESS SYSTEM

BACKGROUND AND SUMMARY OF THE INVENTION

The present invention relates generally to a system for accessing data related to financial transactions. Particularly, users of the Internet or an online information service such as CompuServe® may access data related to their own financial transactions that were posted as recently as the previous day.

Financial information is typically reported to financial service customers in monthly or quarterly written statements. For example, credit card companies send monthly statements that list all transactions and an outstanding balance for the reporting period. Banks and brokerages may also use written statements to report activity. Whether the statements are monthly or quarterly, by the time they reach the customer, they rarely reflect the current state of the account. Several days or weeks may pass between the time the reporting period ends and the statement is received because time is needed to process, print, and send the statements. As a practical matter, financial institutions need to establish a cut off date for reporting account activity.

Although account activity reporting cycles are rather lengthy (e.g., quarterly or monthly), customers may be interested in weekly or daily activity reports. Consequently, customers have a need to obtain recent financial information that would not otherwise be available for weeks or months. Customers also have a need to access the recent financial information at their own convenience—preferably from anywhere and at any time. Following access to the financial information, customers may have a need to communicate with the

financial services provider. For example, a customer may have a question about a transaction or following review of the transactions, a customer may wish to submit a payment electronically. Finally, customers need to see the financial data presented in an organized and understandable format.

The present invention (Conductor℠) is a suite of online financial services. Supported functions include credit card account lookup and reporting, and checking and bill paying. In addition, customers and financial services providers may communicate with each other. For example, Conductor allows customers to view and use financial information concerning recent activity in various accounts. Specifically, financial data relating to credit and debit card transactions are available through the Internet or an online information service the day after the transactions are posted. The ability to provide such recent credit and debit card transaction data to users of the Internet or an online information service is unique to the present invention.

The present invention is a sophisticated computerized system of financial services based on the TCP/IP protocol suite. Consequently, the services are available through the Internet. Alternatively, the same services may be made available directly through an online information service such as CompuServe®. In the preferred embodiment, the invention is described in relation to its accessibility through the Internet. Conductor is implemented as a distributed "information cluster" located on the global Internet so it may be accessed from a variety of presentation tools. An example of the type of information available from Conductor is financial data relating to credit and debit card transactions processed daily by a financial services provider. The financial data are transmitted daily to Conductor so that users of the Internet or an online information service may access financial data relating to their own credit and debit card transactions. The financial data may also be transmitted for further processing

to an accounting, word-processing, or spreadsheet software package running on the user's computer.

The system of the present invention has several advantages over known financial information access methods. Conductor may be accessed at any time from around the world because it is part of the global Internet. In an alternative embodiment, Conductor may be accessed directly through an online information service such as CompuServe®. With either embodiment, it may be accessed using any one of a number of presentation tools. Because of its ties to financial services providers, Conductor allows credit or debit cardholders to review account activity regarding postings that occurred as recently as the previous day. Cardholders use familiar access methods to view and download the financial data. Finally, the present invention allows the financial data to be organized for direct transmission to popular accounting, word-processing, and spreadsheet programs. Due to the sophistication of the process used for converting and downloading data to the other programs, data may be downloaded as frequently as the user desires. These advantages and others are explained further by the accompanying drawings and detailed description.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a diagrammatic view of one embodiment of the present invention;

Figure 2 is a block diagram of the system architecture of the present invention;

Figure 3 is a diagrammatic representation of the processing of a financial transaction;

Figure 4 is a diagrammatic representation of a financial transaction;

Figure 5 is a computer screen view of financial data available to a user; and

Figure 6 is a computer screen view of financial data available to a user.

DETAIL DESCRIPTION OF PREFERRED EMBODIMENT(S)

Applying principles of modularity and abstraction, distributed systems technologies are used to create the architecture necessary for delivering diverse types of services over a wide area network. Sources of data may be as varied as the interfaces to it. The Conductor℠ System is based on a Client/Server model so that it is easily extensible. It is implemented as a platform-portable, language-independent distributed object framework. Use of the distributed approach permits the easy integration of new services and providers for the system. For example, the Conductor System may easily serve as a back-end resource for existing online service providers. The distributed approach also allows the system to be accessible through a number of interfaces: for example, native Microsoft® Windows™ applications, hyper-text mark-up language (HTML) browsers, text-terminals, X.25 transactions, even voice telephony.

Referring to Figure 1, a diagrammatic representation of access to the Conductor℠ Network is shown. Preferably, users connect to the Conductor suite of online financial services via the Internet 12. Methods for providing services via the Internet are well-known in the art and are not explained here. Conductor host computers are accessible world-wide from any site with TCP/IP name resolution and packet routing to the *conductor.com* domain. Preferably, host computers running the Windows NT™ Operating System and the UNIX® Operating System are used in the distributed environment. Clients and servers may run on any of twenty operating systems. Multiple user interfaces to Conductor are implemented as different types of clients. As shown in Figure 1, a user may communicate with Conductor via a web browser 10 or via the CompuServe Information Service 14 using the CompuServe Information Manager for Windows (WinCIM®) 16. Other methods of access may be used as well—for example, a native Microsoft® Windows™ application. In addition, Conductor may

be implemented as part of an online information service so that it is available only to subscribers of the online information service.

As shown in Figure 1, packets destined for Conductor are routed 18 to a Web Server 22 for processing. Because security is a significant issue for online financial information systems, a Firewall 20 is established between the Router 18 and the Web Server 22. User verification and data access may then occur in a secure environment. Separate user connect/data access protocols isolate internal/external networks. An indirect method of user identification is used to secure account numbers and sensitive data are passed via two-key encryption. Token passing is used for connected host identification.

To provide the features of the present invention, Conductor is built on a Common Object Request Broker Architecture (CORBA)-compliant Distributed Object Computing Platform. This development platform is well-known in the art and is not explained here. Primary system components include Object Servers, Name Lookup Servers, and Data Servers. Other components include Communication, Security, and Logging servers. As shown in Figure 1, a number of Name Servers 24, 26, 28 and Financial Object Servers 30, 32, 34 may be in operation at one time. These servers may communicate with a Legacy System 38 or other Database Servers 36 in order to respond to specific requests for information. Data requests may be serviced in any one of a number of ways. For example, data may be accessed using a Microsoft® SQL Server running on Windows NT™.

Clients have an object-oriented Application Programming Interface (API) to distributed resources or services using a class-like construct called an "Interface" which groups operations and attributes. Because clients know only the nature of the Interface, it may be implemented in any manner. For example, Interfaces may be implemented in one language and clients in another. The implementation of an Interface may then be altered at

will without affecting any clients. As long as the protocol to the Interface is stable, the client implementation is stable.

Clients located anywhere on the global Internet ask for and bind to services by name. Clients locate Interfaces by naming a server which implements one, and they may do so from any site with a TCP connection to the Conductor domain. The names of servers are provided by a name lookup Interface which runs on the only host whose name client applications need to know. The access is synchronous and call-level using either C++, Smalltalk, or C. In other words, clients access services by making standard synchronous procedure calls. Client load is automatically apportioned among all ready object servers at lookup time.

There are several benefits to using name lookup to connect clients and servers. A name lookup layer isolates clients from the location or readiness of any individual object server. Although the system is based on the Internet Protocol (IP), clients are completely isolated from back-end data sourcing concerns and do not need to know the IP addresses of object servers. Using this approach, servers may be added simply by connecting to the network, installing system and server software, and adding the machine name to the lookup database. Consequently, clients are not affected by database, network, operating system, hardware platform, or server architectural changes. For example, native 32-bit Windows™ applications may use client-side abstraction libraries that hide details of binding to and executing calls on remote objects. Objects may be implemented on cheap, fast Intel-based Windows NT™ servers and new servers may be added to the system by copying files over and adding the host name to a single locator file. The distributed nature of the system means that it is composed of relatively simple applications that implement a single interface or a small group of interfaces.

The interface between a client and a server is binary. Such an interface is more efficient and the data may be useful in more varied applications. Binary data may be converted to text for viewing by humans, sent in binary form to other providers, or retrieved in binary form and processed by a consumer application. Binary objects may be dragged off of a window and dropped into a finance application or they may be used to generate reports.

A suite of online interfaces may be used by applications, service providers, and other clients to manipulate financial information available through Conductor. An application-level protocol specifies how a client interprets data sent to it by a server. When one part of the application needs something, it calls a procedural interface in another part. Such calls do not return until the procedure has executed so the flow of control is simple and direct. Extending these synchronous procedure calls across the network interface has the advantage of simplifying the access to distributed resources by elevating it to the level of standard procedural mechanisms familiar to a majority of developers.

Referring to Figure 2, a diagram of the Conductor℠ System Architecture is shown. Financial information of interest to users of the system is contained in different databases 28, 34, 40 within the distributed environment. Each database has its own access mechanism 26, 32, 38. As explained earlier, among the methods for accessing the system are a web browser 10 that communicates through a Web Server 20 or a native Windows™ application 12.

The Firewall 14 increases system security. The TCP/IP protocol stack 16 is the Internet communication vehicle. The Object Request Broker (ORB) is an "information bus" that connects clients to the objects they need in a heterogeneous environment. By definition, an ORB is platform independent, language neutral, and may run in many networked environments. ORBs implemented in one language may communicate with those implemented in another, on a completely different hardware platform. The same is true for the object

implementations to which the ORB provides access. Three example objects are shown in Figure 2—a card object 24, a checking object 30, and a bill pay object 36. The objects serve as links between clients 10, 12 and data contained in the databases 28, 34, 40. The name server 22 performs the name lookup function for clients so they may establish communication with the object that performs the needed services.

Referring to Figure 3, a diagrammatic view of a sample transaction processed by the present invention is shown. Financial transaction data originates at a retail establishment. A purchase may be made with a bank card such as a Visa® or MasterCard® credit card or a bank debit card 24. The transaction is processed at the merchant location through a dial terminal 22 or any other device in communication with an authorization or settlement center 20. The authorization/settlement system 20 determines whether a particular transaction should be approved. An approved transaction represents an obligation for the cardholder to pay money to the financial institution that issued the card.

Approved transactions may then be reported to the purchaser's bank 18 as well as other supporting financial institutions for further processing before transmission to a financial services provider 16 in communication with a Conductor host computer 14. The financial services provider functions as a repository for financial transactions originating from a variety of sources and supported by a large number of financial institutions and processing centers (i.e., different banks, clearing houses, authorization centers, etc.). Transactions may follow varied paths before arriving at the financial services provider 16. After transmission to the financial services provider 16, the transactions may be organized and sorted for transmission to a Conductor host computer 14. After the data are available on the host computer 14, a Conductor user 10 may access the database via the Internet or through a native Windows™ application 12 according to the method described above.

Referring to Figure 4, a diagrammatic representation of an individual financial transaction is shown. Preferably. for each credit or debit card transaction, the data for each record includes the following:

Account number 10: unique series of digits to identify cardholder. Also identifies issuer and type of financial transaction card.

Merchant number 12: unique series of digits to identify merchant for transaction. May be used to look up a textual description for the merchant.

Transaction date 14: the date on which a transaction occurs.

Capture date 16: the date on which a transaction is processed.

Transaction amount 18: the extent of the cardholder's obligation to the issuing financial institution.

Standard industry code 20: an unique code identifying the type or category of the transaction.

Authorization code 22: number assigned to a merchant sale that has received specific approval.

Checksum 24: value based on transaction data calculated and appended to transaction record to aid in verifying integrity of transmissions.

Although a preferred format is described. other data formats may be used. Also, the same data may be organized within a record in any manner.

Preferably, transactions stored in the database are accessible according to cardholder account number. In addition to processing individual financial transactions for each cardholder, the financial services provider may summarize the transactions and create reports for each cardholder represented in the data. For example, the financial services provider may create a report that includes card balances for previous months as well as a balance for transactions occurring during the current billing cycle. The data may be organized and sorted according to a variety of selection criteria.

Referring again to Figure 3, after organization and sorting by the financial services provider 16, the financial transaction data are transmitted to a Conductor host computer 14. Preferably, transaction data are transmitted daily to the host computer 14. Users 10 then request access via the Internet 12 to the financial transaction data stored on the host computer 14. Preferably, the user may choose one of several presentation tools to access the host computer.

Once connected to the host computer, the user is prompted for information needed to generate a report. For example, the user may be asked to provide an account number, a personal identification number, and a request for either the current month's statement or the previous month's statement. The host computer generates the report and communicates with the session management software running on the user's computer so that the user may view the data. Preferably, the user has the option of downloading the data to an accounting program, a spreadsheet, or a word-processing program. The data may be converted to another format during the download process for use in the target program.

Referring now to Figure 5, a report for a user's current month's statement is shown. The report may contain data for transactions that were posted as recently as the previous day. Figure 6 shows a report for the previous month's statement. The present invention allows

users to receive this information in a more timely manner as it is available before a statement arrives in the mail. In addition, users may access the data at their own convenience.

Preferably, users may view and manipulate only their own financial data. Furthermore, users may not alter the data. Preferably, users have the option of downloading the financial data to an accounting software package such as Intuit's Quicken® or a word-processing program such as Novell's WordPerfect®. The ability to convert and download recent credit and debit card transactions to such popular programs is unique to the present invention. The need to enter the data manually is eliminated. The sophistication of the conversion process allows data to be downloaded as frequently as the user desires. The process recognizes whether a transaction has been previously converted so users do not risk double-entering data. In addition, the data may be manipulated in a variety of ways. For example, the association of standard industry codes with each transaction allows transactions to be categorized automatically. Another benefit of the ability to review recent transactions is increased bank card security. Cardholders may detect and report unauthorized transactions within days, or possibly hours, of when they were posted thereby increasing the likelihood of locating the unauthorized user.

The present invention gives users of the Internet the opportunity to review recent credit and debit card transactions at any time and from any location. Consequently, cardholders are able to monitor card activity and determine account status daily rather than monthly or quarterly. The ability to have accurate and current information concerning financial matters is important in an age of electronic funds transfer. The present invention has been described in the form of preferred embodiments. However, several modifications and variations may be made to the invention and fall within the scope of the claims. For example, the present invention may be implemented as one of many services available through an online

information service. Users of the online information service may then be given the opportunity to review recent financial transactions at any time and from any location.

WHAT IS CLAIMED IS:

1. A financial information access system comprising:

a financial services provider for processing credit and debit card transaction data;

an information service network capable of accepting information feeds directly or indirectly from a variety of information sources including said financial services provider;

a first connection between said financial services provider and said information service network for transmitting said credit and debit card transaction data from said financial services provider to a host computer connected to said information service network;

a second connection between said host computer and an information service network user computer for accessing said credit and debit card transaction data on said host computer.

2. The system of claim 1, wherein at least one of said credit or debit card transactions was posted during the previous twenty-four (24) hours.

3. The system of claim 1, wherein said processing of said credit and debit card transaction data comprises sorting transactions according to an account number.

4. The system of claim 1, wherein said processing of said credit and debit card transaction data comprises formatting transactions to facilitate automatic categorizing of transactions according to specific selection criteria.

5. The system of claim 1, wherein said processing of said credit and debit card transaction data comprises sorting transactions according to a standard industry code.

6. The system of claim 1, wherein said credit and debit card transaction data may be transmitted from said host computer to a program running on said user computer.

7. The system of claim 6, wherein said credit and debit card transaction data transmitted to said program running on said user computer are scanned to prevent double entries into said program.

8. The system of claim 1, wherein said information service network is the Internet.

9. The system of claim 1, wherein said information service network is part of an online information service.

10. A method for accessing credit and debit card transaction data comprising the steps of:

transmitting credit and debit card transaction data from retail establishments to a financial services provider, said transmission occurring at least daily;

organizing and formatting said credit and debit card transaction data;

transmitting said organized and formatted credit and debit card transaction data to a host computer connected to a wide area network, said transmission occurring at least daily;

accessing from a wide area network user computer said credit and debit card transaction data on said host computer.

11. The method of claim 10, further comprising the step of organizing and formatting said credit and debit card transaction data according to an account number.

12. The method of claim 10, further comprising the step of converting said credit and debit card transaction data for use in a program running on said wide area network user computer.

13. The method of claim 12, further comprising the step of converting said credit and debit card transaction data so that individual transactions are converted only once.

14. The method of claim 10, further comprising the step of formatting said credit and debit card transaction data to facilitate automatic categorizing of transactions according to specific selection criteria.

15. The method of claim 10, further comprising the step of sorting said credit and debit card transactions according to a standard industry code.

16. The method of claim 10, wherein said wide area network is the Internet.

17. The method of claim 10, wherein said wide area network is an online information service.

18. A financial information access system comprising:

a financial services provider for processing credit and debit card transaction data;

one or more credit or debit card transactions processed by said financial services provider in substantially real time;

an online information service network capable of accepting information feeds directly or indirectly from a variety of information sources including a financial services provider;

a connection between said financial services provider and said online information service network for transmitting data relating to said one or more credit or debit card transactions from said financial services provider to a host computer connected to said online information service network, said transmission occurring at least daily;

a connection between said host computer and an online information service network user computer for viewing said credit or debit card transaction data on said host computer or transmitting said credit or debit card transaction data from said host computer to said user computer; and

a first program on said user computer for converting said credit or debit card transaction data for use in a second program, said first program capable of removing from said transaction data individual transactions that have been converted previously.

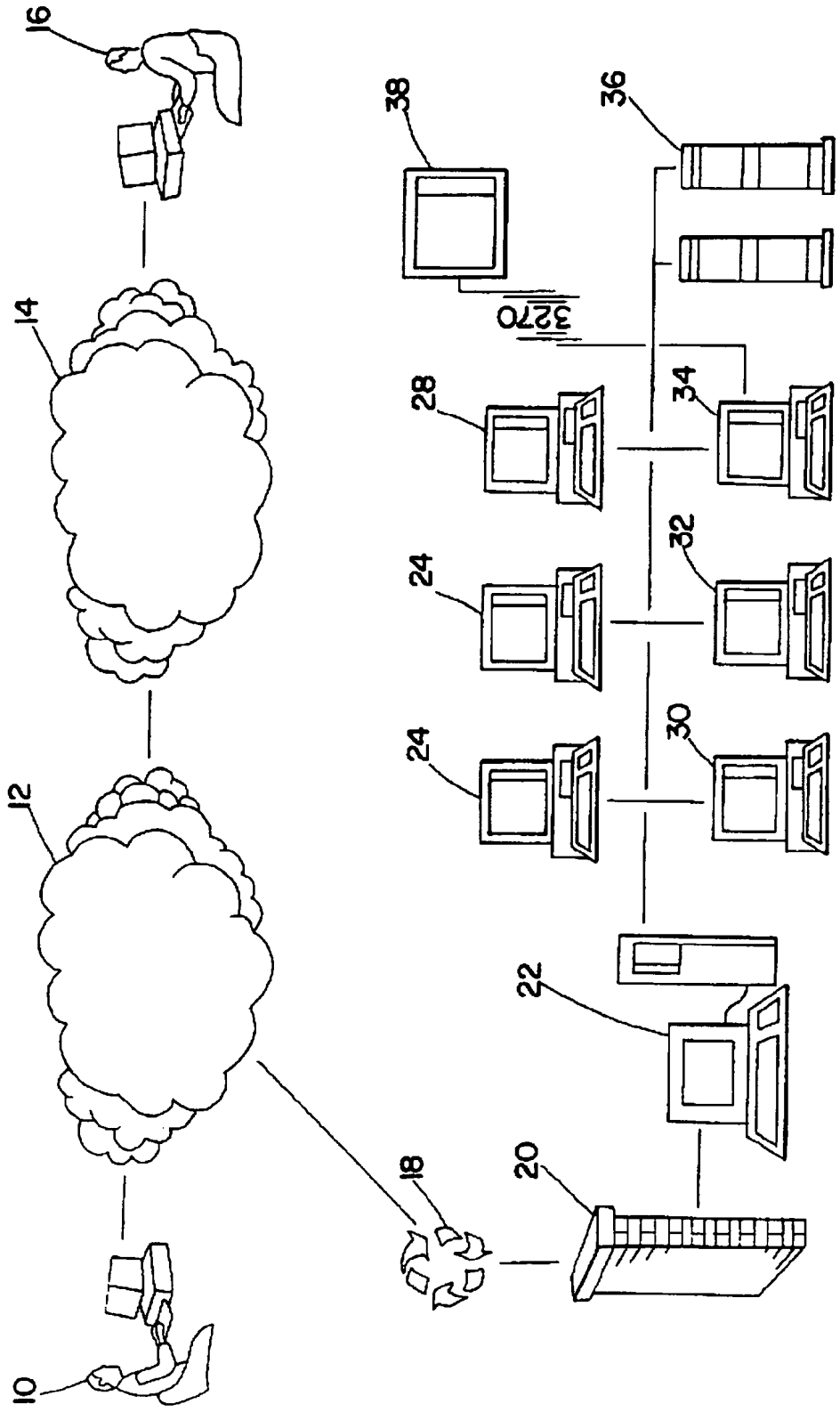
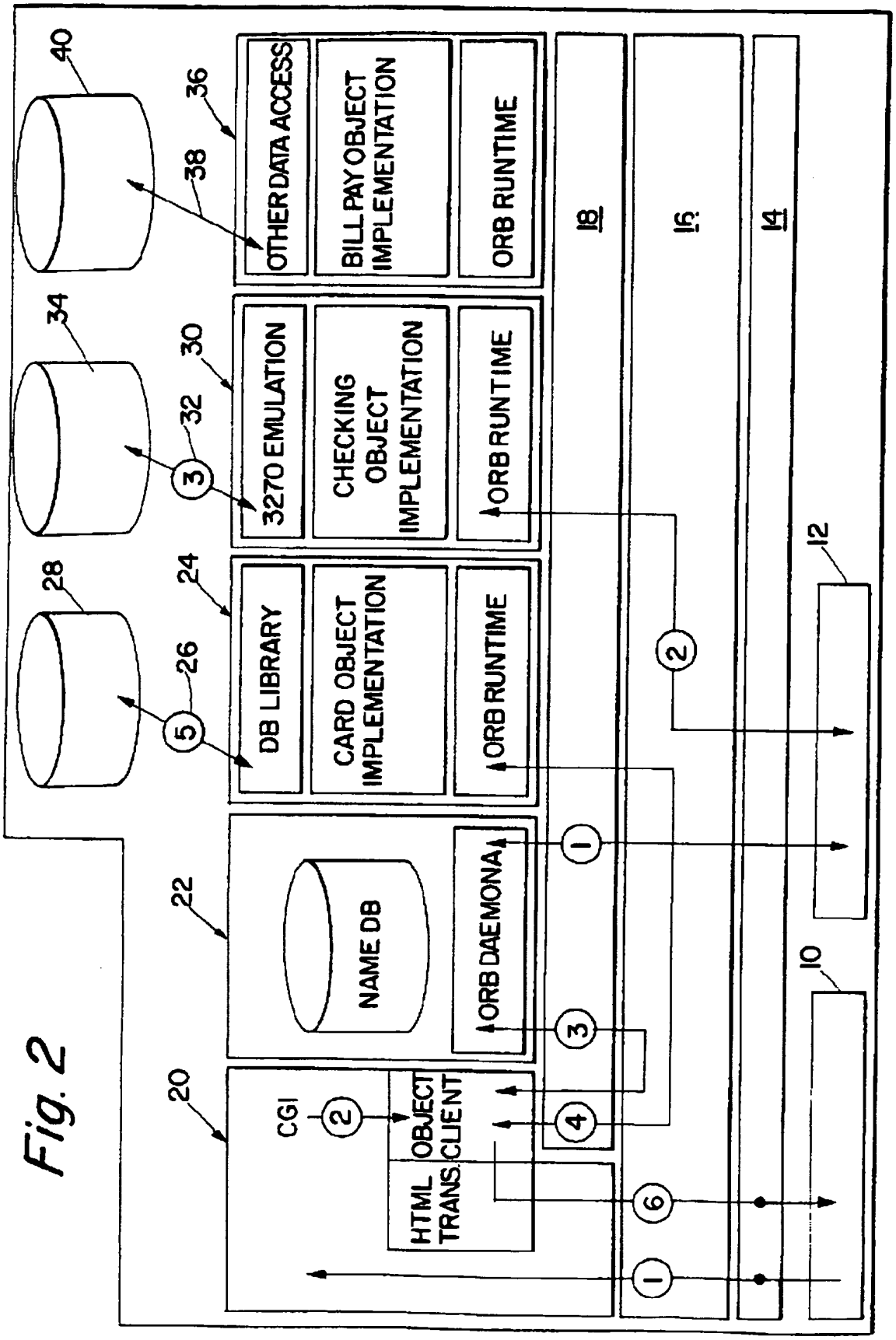


Fig. 1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OTHER DATA ACCESS
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Fig. 2

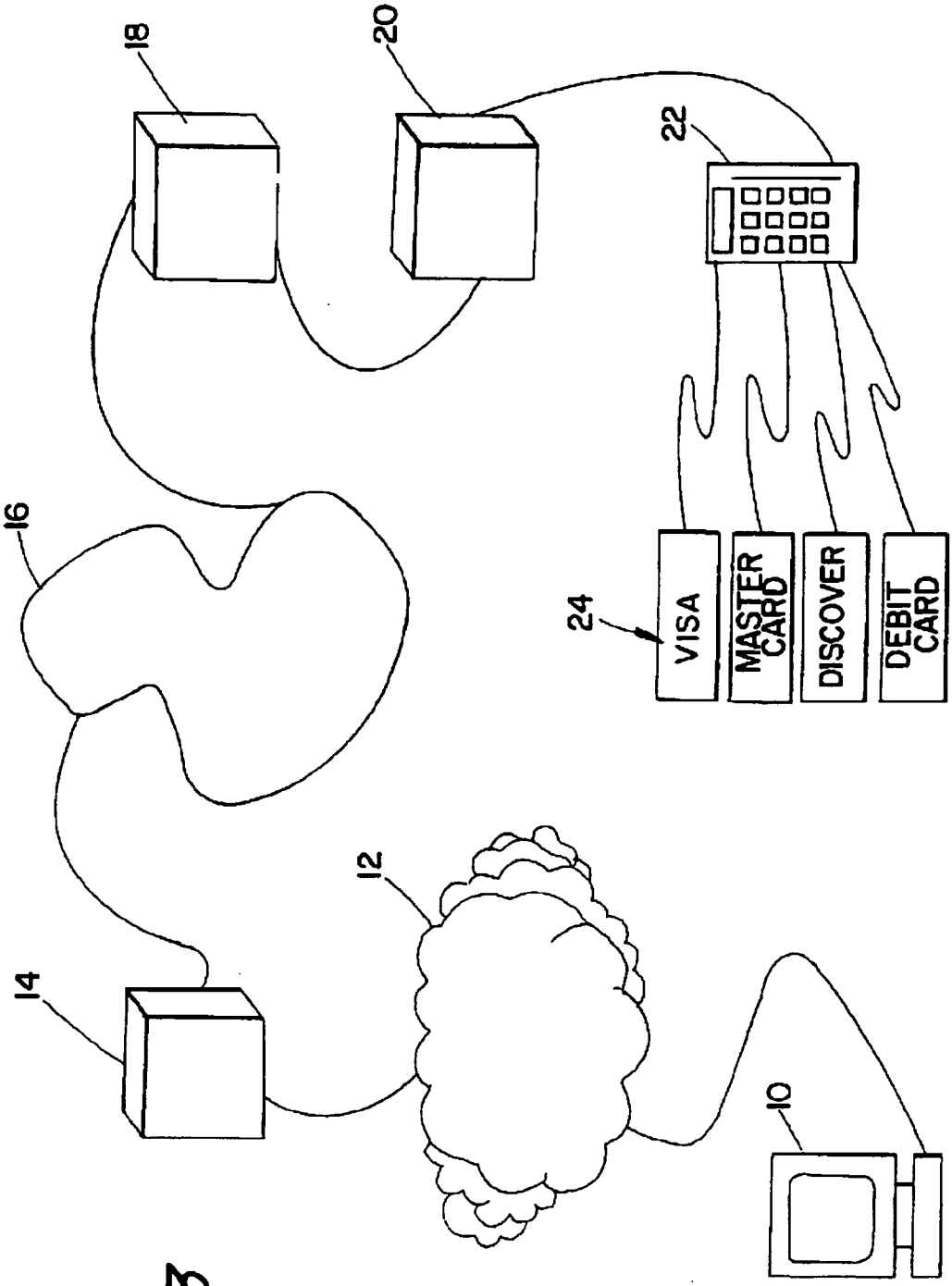


Fig. 3

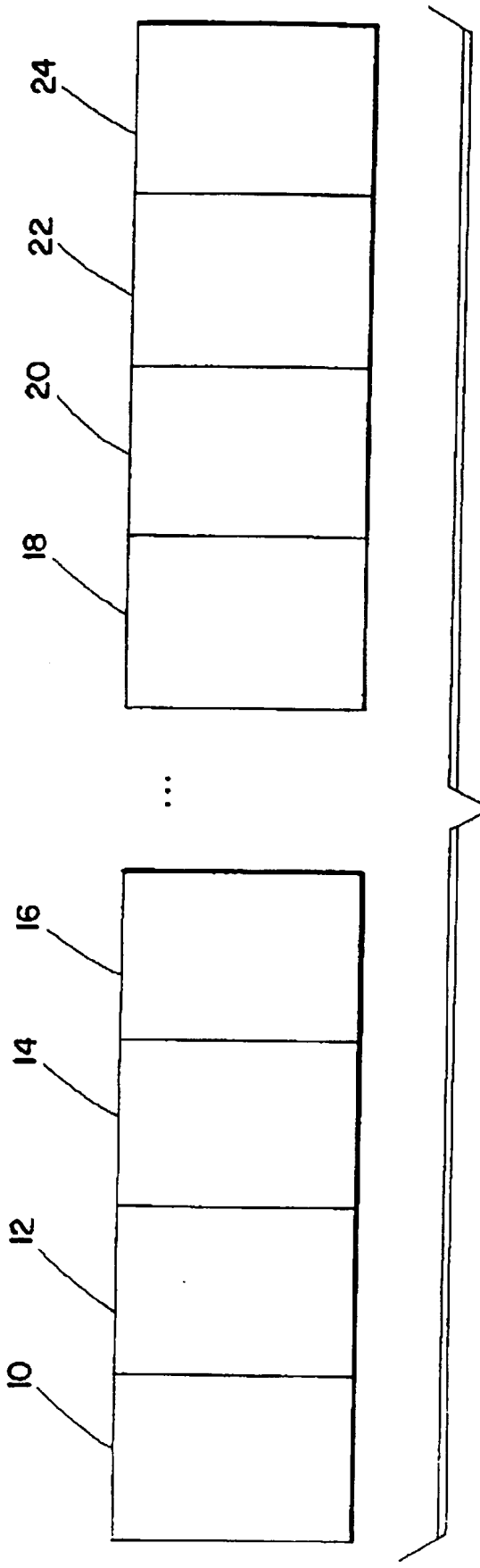
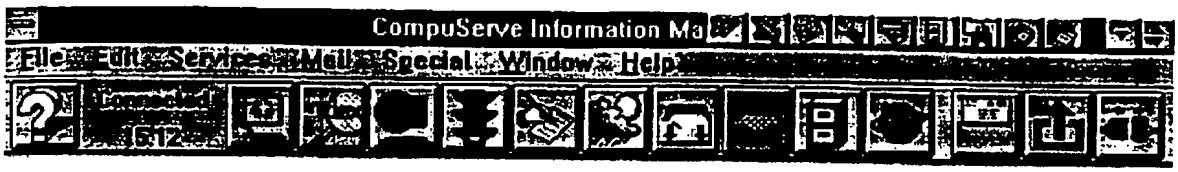


Fig. 4



CONDUCTOR Card Review
Account Summary

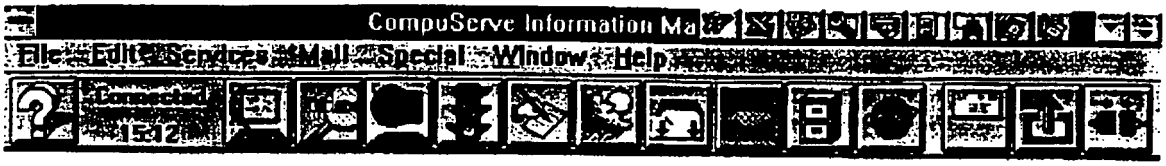
Name(s) : JOHN DOE, JANE DOE
User ID : 73987,4321
Account Number: 4638411001028765

Credit Line	7,500.00	Last Statement:	
Current Balance	5,244.62	Balance	5,012.19
Available Credit	2,255.38	Closing Date	06/15/94

Account Activity Since Last Statement

Post Date	Description	SIC	Tranx Date	City,State	Amount
06-20	AT&T PHONE CENTER	5251	06-17	MONTCLAIR, NJ	158.36
06-22	AMERICAN AIR	5411	06-18	FAIRFIELD, CT	53.23
06-22	CARLISLE HOTEL	5541	06-19	OMAHA, NE	20.84

Fig. 5



CONDUCTOR Card Review
Electronic Statement

Name(s) : JOHN DOE, JANE DOE
User ID : 73987,4321
Account Number: 4638411001028765

		Account Summary	
Credit Line	7,500.00	Previous Balance	4,960.89
Closing Date	06/15/94	Purch./Other Charges	151.30
Payment Due Date	07/10/94	Cash Advances	0.00
		Credits	0.00
Amount Due		Payments	100.00
New Balance	5,012.19	Late Payment Charge	0.00
or		Finance Charge	0.00
Minimum Payment	100.00	New Balance	5,012.19

Post Date	Description	SIC	Tranx Date	City,State	Amount
06-13	BARNES & NOBLE	5542	06-11	WEST PATTERS, NJ	11.90
06-13	BOB EVANS RESTAUR	5661	06-11	DUBLIN,	47.22
06-14	**PAYMENT RECEIVED, THANK YOU**				100.00CR

Fig. 6

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US96/16567

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :G06F 17/60; 7/52
US CL : 395/235, 240, 242
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 395/235, 240, 242

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

APS, MAYA, DIALOG

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	Zutell, Irene; "Amex says On-Line Booking Keeps Agents In the Loop"; Travel Agent; February 6, 1995; page 1.	1-18
Y	"On-Line Services Give Card Holders Transaction Info"; NewByte News Network; February 6, 1995; pages 1-2	1-18
Y	"Banks Offer Customers Internet Acess"; Multimedia Daily; May 22, 1995; Page 1.	1-18
Y	"OnLine Services Allows Account Review (Block Financial Corp.)"; Card News, October 31, 1994; v9. n21, page 3.	1-18
Y	US 5,230,048 (MOY) 20 July 1993, Abstract, figure 1, figure 4, col. 1, lines 10-17, col. 2, lines 3-47.	1, 3-7, 9-15, 17-18.

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
25 NOVEMBER 1996	18.12.96
Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer GAIL HAYES BRIAN A. HARDEN PARALEGAL SPECIALIST GROUP 2400 Telephone No. (703) 305-9711

Form PCT/ISA/210 (second sheet)(July 1992)*